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PATENT
Attorney Docket No. H 4325

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF EXPRESS MAIL (37 CFR § 1 10)

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BY James M. Olsen
JAMES M. OLSEN

In re Application of:

Thomas GASSENMEIER et al.

Serial No.: Unassigned — Group Art Unit: Unassigned

Filed: November 22, 2000 — Examiner: Unassigned

For: PROCESS FOR THE PRODUCTION OF PARTICULATE DETERGENTS

Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

UTILITY PATENT APPLICATION TRANSMITTAL UNDER 37 C.F.R. § 1.53(b)

APPLICATION ELEMENTS

1. [X] Fee Transmittal Form (*Submit an original, and a duplicate for fee processing*)
2. [X] Specification [*Total Pages* **9**]
3. [] Drawings (*35 U.S.C. § 113*) [*Total Sheets*]
4. [X] Combined Declaration and Power of Attorney [*Total Pages* **4**]
   a. [X] Unexecuted
   b. [] Copy from prior application (37 C.F.R. § 1.63(d))

(for continuation/divisional with Box 17 completed)

[Note Box 5 below]

i. [] DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d) and 1.33(b).

5. [] Incorporation By Reference (*usable if Box 4b is checked*)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. [X] Applicants claim the right to priority under 35 U.S.C. § 119(a)-(d) or § 365(b) based on foreign application No. 199 57 036.1, filed in Germany, on November 26, 1999 (see attached Claim for Priority).

7. [] Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all necessary*)

a. [] Computer Readable Copy

b. [] Paper Copy (identical to computer copy)

c. [] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. [] Assignment Papers (cover sheet & document(s)) [*Total Pages*]

9. [] 37 C.F.R. § 3.73(b) Statement
(*when there is an assignee*)

10. [X] English Translation Document (*if applicable*)

11. [] Information Disclosure Statement (IDS) / PTO-1449 [] Copies of IDS citations

12. [X] Preliminary Amendment

13. [X] Return Receipt Postcard (*Should be specifically itemized*)

14. [X] Claim for Priority

15. CORRESPONDENCE ADDRESS

[] *Customer Number or Bar Code Label*

(Insert Customer No. or Attach bar code label here)

or

[X] *Please address all correspondence to address below*

CONNOLLY BOVE LODGE & HUTZ LLP
P.O. Box 2207
Wilmington, Delaware 19899, U.S.A.
Telephone: (302) 658-9141
Fax: (302) 658-5614

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 03-2775. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

CONNOLLY BOVE LODGE & HUTZ LLP

Dated: November 22, 2000

By: James M. Olsen
James M. Olsen
Reg. No. 40,408

PATENT
Attorney Docket No. H 4325

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Thomas GASSENMEIER et al.	)	
	)	
Serial No.: Unassigned	)	Group Art Unit: Unassigned
	)	
Filed: November 22, 2000	)	Examiner: Unassigned
	)	
For: PROCESS FOR THE PRODUCTION OF PARTICULATE DETERGENTS	)	

Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Sir:

FEE TRANSMITTAL LETTER

Enclosed is a new patent application. The items checked below are appropriate:

[X] The claims are calculated below, as amended in the Preliminary Amendment filed herewith:

	Number Filed		Number Extra	Rate	Basic Fee $690.00
Total Claims	1	- 20 =	0	x $18.00	$0.00
Independent. Claims	1	- 3 =	0	x $78.00	$0.00
Multiple Dep. Claims				+ $270.00	
				Total =	$690.00
				Reduction by ½ for filing by small entity	- $0.00
				TOTAL FILING FEE	$690.00

[X] A check for $690.00 to cover the $690.00 filing fee is enclosed.

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Respectfully submitted,

CONNOLLY BOVE LODGE & HUTZ LLP

Dated: November 22, 2000

By: James M. Olsen
James M. Olsen
Reg. No. 40,408

PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Thomas GASSENMEIER et al.	)	
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Serial No.: Unassigned	)	Group Art Unit: Unassigned
	)	
Filed: November 22, 2000	)	Examiner: Unassigned
	)	
For: PROCESS FOR THE PRODUCTION OF PARTICULATE DETERGENTS	)	

Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above application, please amend this application as follows:

IN THE CLAIMS:

Please cancel claims 2-9, without prejudice or disclaimer of the subject matter thereof.

REMARKS

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 03-2775. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be

charged to our Deposit Account.

Respectfully submitted,

CONNOLLY BOVE LODGE & HUTZ LLP

Dated: November 22, 2000

By: James M. Olsen
James M. Olsen
Reg. No. 40,408

Process for the Production of Particulate Detergents

This invention relates to a process for the production of particulate detergents.

Particulate detergents normally consist of a plurality of ingredients which, owing to mutual incompatibilities, are normally distributed over several particulate components and incorporated thus in the detergent as a whole. Examples of such mutually incompatible ingredients are bleaching agent and bleach activator which, although intended to react with one another under in-use conditions, i.e. in aqueous solution, to develop the high bleaching performance required, must not react with one another during storage because, otherwise, they would no longer be available for the intended purpose.

A less graphic example of the non-optimal co-operation of individual detergent ingredients arises out of their pH-dependent performance. Whereas enzymes and certain bleaching systems, for example, have their optimum pH in the neutral or mildly acidic pH range, anionic surfactants and builders, for example, require an alkaline pH value in order fully to develop their effect. Speaking quite generally, both soil particles and most textile fibers develop an increasing number of negative charges with increasing pH value which results in increasing repulsion among them and hence contributes to the desired washing result. For this reason, the washing of textiles has for ages been carried out with more or less alkaline wash liquors. The same applies to aqueous solutions for cleaning hard surfaces, for example in machine dishwashing.

A way out of this dilemma of different pH optima for different ingredients is available via the time dimension of the washing/dishwashing process and consists in initially establishing a pH value at which certain

kg and µm, respectively.

If several particles rather than just one particle are to be treated at the same time, as is generally the case, m_p is understood to be the total weight of the particles to be treated and r their mean radius.

A particle to be treated in accordance with the invention may optionally contain all the ingredients of a detergent, i.e. it is possible by the process according to the invention to coat a preformed detergent. However, only at least some or all of the alkaline ingredients of such detergents are preferably treated in accordance with the invention, in which case the alkaline ingredients may be present as particulate individual substances or several of the alkaline ingredients may be present in a single particle to be treated. The alkaline ingredients in question are preferably alkali metal silicates, alkali metal alumosilicates, alkali metal phosphates, alkali metal carbonates, alkali metal perborates and alkali metal percarbonates and mixtures thereof, sodium being the preferred alkali metal.

The process according to the invention is preferably carried out by applying the liquid or paste-form, optionally molten acidic component to the optionally heated particle consisting at least partly of an alkaline detergent ingredient in a mixer or granulator. Particularly good coating is achieved when the acidic component is applied to the particle over a period of 5 to 20 minutes.

Although only a theoretical assumption to which applicants do not wish to be bound, the process according to the invention presumably creates a particularly dense and comparatively sparingly or slowly water-soluble coating, which remains reliably impermeable after introduction into an aqueous system and hence allows the production of detergents with a stepped pH profile, through the neutralization reaction of the acidic coating material with the alkaline particle on the surface thereof. The particles obtainable in accordance with the invention almost exclusively contain the

ingredients may also be present in several particulate components differing in their composition. The at least one other component used may also have such a solubility that, under the initially lower pH conditions, it releases as much as possible of the active ingredient present which, however, only develops its full effect after an increase in pH through the then higher alkalinity of the aqueous system surrounding it or which otherwise reacts with the alkali metal component then released. One example of this particular variant is a bleach activator which is soluble or made up to dissolve at a relatively low pH and which reacts with a bleaching agent released from the particle coated in accordance with the invention and, because it is already dissolved, is capable of developing a strong bleaching effect extremely quickly.

Examples

Example 1

1 kg of spheronized sodium percarbonate with a mean particle diameter of 400 µm were premixed cold with 25 g of stearic acid (flakes). The resulting premix was transferred to a commercially available plowshare mixer with horseshoe blades preheated to 90°C (casing temperature) in which it was reactively compounded for 20 mins. at speed stage 2 and at a measured product temperature of 80°C. The hot product was removed and, after cooling in the usual way, was used, for example, for the production of detergents.

Example 2

Quantities of 2.5 g and 1.5 g of stearic acid were added to quantities of 100 g of spheronized sodium percarbonate (mean particle diameter 1400 µm) in a glass beaker, followed by heating with stirring to around 80°C. After the molten stearic acid had been absorbed into the alkaline particles, the whole was reactively compounded for another 20 mins. at

CLAIMS

1. A process for the production of particulate detergents or premixes suitable for their production by application of a flowable acidic component to a particle consisting at least partly of an alkaline detergent ingredient, the percentage of acidic component applied being governed by the formula $m_c/(m_c + m_p) = c \cdot 1/r$, where m_c is the weight of the acidic component, m_p is the weight of the particle, r is the radius of the particle and c is a factor of 0.5 length units to 20 length units.

2. A process as claimed in claim 1, characterized in that the particle consisting at least partly of an alkaline detergent ingredient has a radius r of 100 µm to 1,000 µm.

3. A process as claimed in claim 1 or 2, characterized in that c is a factor of 5 length units to 10 length units.

4. A process as claimed in any of claims 1 to 3, characterized in that the acidic component is solid at room temperature and the application of the flowable acidic component is carried out at a process temperature above room temperature.

5. A process as claimed in any of claims 1 to 4, characterized in that the acidic component is applied to the particle over a period of 5 minutes to 20 minutes.

6. A process as claimed in any of claims 1 to 5, characterized in that the alkaline detergent ingredient is selected from the alkali metal silicates, alkali metal alumosilicates, alkali metal phosphates, alkali metal carbonates, alkali metal perborates and alkali metal percarbonates and mixtures thereof.

7. A process as claimed in any of claims 1 to 6, characterized in that the acidic component is selected from mono- or dicarboxylic acids containing 10 to 22 carbon atoms, sulfuric acid monoalk(en)yl esters containing 10 to 20 carbon atoms, alk(en)yl or alkylaryl sulfonic acids containing 10 to 20 carbon atoms, polymeric polycarboxylic acids

Abstract

The invention relates to a process for the production of particulate detergents or premixes suitable for their production by application of a flowable acidic component to a particle consisting at least partly of an alkaline detergent ingredient, the percentage of acidic component applied being governed by the formula $m_c/(m_c + m_p) = c \cdot l/r$, where m_c is the weight of the acidic component, m_p is the weight of the particle, r is the radius of the particle and c is a factor of 0.5 length units to 20 length units.

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0010/PTO
Rev. 6/95

U.S. Department of Commerce
Patent and Trademark Office

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

☒ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing

Attorney Docket Number	H 4325
First Named Inventor	GASSENMEIER, Thomas
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:
My residence, post office address, and citizenship are as stated below next to my name.
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PROCESS FOR THE PRODUCTION OF PARTICULATE DETERGENTS

(Title of the Invention)

the specification of which

☒ is attached hereto

OR

☐ was filed on (MM/DD/YYYY) ☐ as United States Application Number or PCT International Application Number ☐ and was amended on (MM/DD/YYYY) ☐ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY	Priority Not Claimed	Certified Copy Attached? YES	NO
199 57 036.1	Germany	11/26/1999	☐	☒	☐

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
		☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

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DECLARATION

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Firm Name ____ Customer Number or label ____

OR

☒ List Attorney(s) and/or agent(s) name and registration number below:

Name	Registration Number	Name	Registration Number
Wayne C. Jaeschke	21,062	See supplement sheet attached.	
Glenn E. J. Murphy	33,539		
Stephen D. Harper	33,243		

☒ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.

Please direct all correspondence to: ☐ Customer Number or label ____ OR ☒ Fill in correspondence address below

Name	James M. Olsen				
Address	Connolly, Bove, Lodge & Hutz				
Address	P.O. Box 2207 (1220 Market Street)				
City	Wilmington	State	DE	ZIP	19899
Country	USA	Telephone	302-658-9141	Fax	302-656-9072

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned

Given Name	**Thomas**	Middle Initial		Family Name	**GASSENMEIER**	Suffix e.g. Jr.	
Inventor's Signature					Date		
Residence: City	**Duesseldorf**	State		Country	**Germany**	Citizenship	**Germany**
Post Office Address	**Mannheimer Weg 16**						
Post Office Address							
City	**40229 Duesseldorf**	State		Zip		Country	**Germany**
Applicant Authority							

☒ Additional inventors are being named on supplemental sheet(s) attached hereto

Type a plus sign (+) inside this box ☐ H 4325

DECLARATION

ADDITIONAL INVENTOR(S) Supplemental Sheet

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Juergen	Middle Initial		Family Name	MILLHOFF	Suffix e.g. Jr.	
Inventor's Signature						Date	
Residence: City	Duesseldorf	State		Country	Germany	Citizenship	Germany
Post Office Address	Schuetzenstrasse 62						
Post Office Address							
City	30211 Duesseldorf	State		Zip		Country	Germany	Applicant Authority	

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Peter	Middle Initial		Family Name	SCHMIEDEL	Suffix e.g. Jr.	
Inventor's Signature						Date	
Residence: City	Duesseldorf	State		Country	Germany	Citizenship	Germany
Post Office Address	Hassels-Strasse 62						
Post Office Address							
City	40599 Duesseldorf	State		Zip		Country	Germany	Applicant Authority	

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Wolfgang	Middle Initial		Family Name	VON RYBINSKI	Suffix e.g. Jr.	
Inventor's Signature						Date	
Residence: City	Duesseldorf	State		Country	Germany	Citizenship	Germany
Post Office Address	Leinenweberweg 12						
Post Office Address							
City	40593 Duesseldorf	State		Zip		Country	Germany	Applicant Authority	

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Ute	Middle Initial		Family Name	KRUPP	Suffix e.g. Jr.	
Inventor's Signature						Date	
Residence: City	Essen	State		Country	Germany	Citizenship	Germany
Post Office Address	Eduard-Lucas-Strasse 26 a						
Post Office Address							
City	45131 Essen	State		Zip		Country	Germany	Applicant Authority	

☐ Additional inventors are being named on supplemental sheet(s) attached hereto

Attorney Docket Number: H 4325
First Named Inventor: GASSENMEIER, Thomas
Title:

Supplemental Sheet of Additional Attorney(s) and/or Agent(s) :

Connolly, Bove, Lodge & Hutz, of Wilmington, DE 19899

Rudolf E. Hutz	Reg. No. 22,397
John D. Fairchild	Reg. No. 19,756
Harold Pezzner	Reg. No. 22,112
Richard M. Beck	Reg. No. 22,580
Paul E. Crawford	Reg. No. 24,397
Patricia Smink Rogowski	Reg. No. 33,791
Robert G. McMorrow, Jr.	Reg. No. 30,962
Ashley I. Pezzner	Reg. No. 35,646
William E. McShane	Reg. No. 32,707
Mary W. Bourke	Reg. No. 30,982
Gerard M. O'Rourke	Reg. No. 39,794
James M. Olsen	Reg. No. 40,408
Francis DiGiovanni	Reg. No. 37,310
Eric J. Evain	Reg. No. 42,517
Daniel C. Mulveny	Reg. No. 45,897
Elliot C. Mendelson (Agent)	Reg. No. 42,878
Christine M. Hansen	Reg. No. 40,634

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☐ Page(s) 24, 6 and 8 of Specifications were not present for scanning. (Document title)

☐ Page(s) _____ of _____ were not present for scanning. (Document title)

Only 4 pages of Declarations were present

☐ ***Scanned copy is best available.***